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Machine Lerning Applications in Minerva

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MINERvA is an experiment exploiting the NuMI neutrino beam line at Fermilab to perform high-precision measurements of neutrino-nucleus interactions on a wide variety of nuclei. A precise understanding of the neutrino-nucleus cross sections is important to reduce systematic uncertainties in the determination of neutrino oscillation parameters and to discriminate between the plethora of nuclear models. In order to improve the measurement of neutrino-nucleus cross section measurement, it is important to precise understanding of the final state particle topology, event selection and so on which in turn demands the application of advance algorithms to maximize the physics output. I will present novel applications of Machine Learning based techniques facilitating the interaction vertex reconstruction, neutral pion reconstruction and hadron multiplicity in the final state.

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